

UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. no. 09/673,340

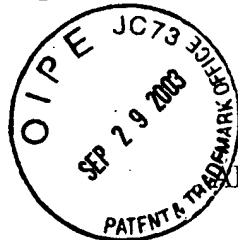
Filed: October 14, 2000

Examiner: Camie S. Thompson

Art unit: 1774

Conf. no. 5113

Attorney docket no. WLAN.P001



APPEAL BRIEF

(1) **Real party in interest:** RCC Regional Compact Car AG.

(2) **Related appeals and interferences.** None are known to appellant.

(3) **Status of claims.** The present application number PCT/CH99/00150 was filed April 14, 1999 with claims numbered 1-46, all in the German language. Entry into the national stage took place October 14, 2000, with new claims 1-46 in the English language presented by preliminary amendment. Claims 21-46 were withdrawn from further consideration by the Examiner as being drawn to a non-elected invention. Claims 1-20 are now before the Examiner and stand rejected. Appeal has been taken with respect to the Examiner's final rejection of claims 1-20.

(4) **Status of amendments.** An amendment was filed April 25, 2003, amending claims 2-20 solely as to form. The Examiner has refused to enter that amendment, basing the refusal on the view that the April 25, 2003 amendment "seeks to narrow the claims." For this reason the Appendix presents the claims as they stood prior to the April 25, 2003 amendment. The Examiner's view that the amendment "seeks to narrow the claims" is in error; the amendment seeks only to address matters of form raised previously by the Examiner.

(5) **Summary of invention.** Appellant now provides a concise explanation of the invention defined in the claims involved in the appeal, referring to the specification by page and line number, and to the drawings by reference characters.

The invention defined in claim 1 is a structural component (reference character 1, figs. 2, 8, 9,

10, 11, 12, 15) of fiber-reinforced thermoplastic material.

The structural component comprises a shape-forming long-fiber-reinforced thermoplastic matrix (reference character 2, figs. 1a, 1b, 2, 6a, 8, 9, 10, 12 and 15) and separate, single load-bearing plastified and consolidated continuous fiber strands (reference character 3, figs. 1a, 1b, 2, 3, 4, 5, 6a, 6b, 7, 9, 10, 12, 13, 15, 16, 17, 18, 19a, 19b, 20a, 20b, 21, 22a, 22b, 22c, 23a and 25 ) with a thermoplastic matrix in a defined position within the structural component. This use of a long-fiber-reinforced thermoplastic matrix 2 and an integrated load-bearing supporting structure 4, formed by continuous fiber strands 3 is described at page 4, lines 26-29.

The positions of the shape-forming long-fiber-reinforced thermoplastic matrix and the separate, single load-bearing plastified and consolidated continuous fiber strands with a thermoplastic matrix define interfaces (reference character 6, figs. 1a, 9, 10, 12, 14, 20a and 20b) therebetween. This is described at page 4, line 29 to page 5, line 2.

The continuous fiber strands are interconnected and have at least one load-transmitting flat internal connecting area (reference character 7, figs. 1b, 2, 3, 7, 10, 13, 14, 15, 19b, 24a, 24b, 24c and 25) between two continuous fiber strands. The load-transmitting internal connecting area 7 is described at page 4, lines 25-26, and again at page 5, lines 2-3. Such a connecting area is discussed at page 5, lines 11-16 and is portrayed in fig. 1b.

The single continuous fiber strands form a load-bearing supporting structure (reference character 4, figs. 1b, 2, 3, 11 and 15) which is integrated in and thermoplastically bonded to the long-fiber-reinforced thermoplastic matrix at the interfaces 6 therebetween. This is described at page 4, line 26 to page 5, line 10.

**(6) Issues.** A concise statement of the issues is presented for review.

*Unobviousness.* A first issue presented for review is whether the final rejection of claims 1-8 and

11-20 as supposedly obvious over a two-way combination of US Pat. No. 5,173,142 to Billiu (“Billiu”) with US Pat. No. 5,362,431 to Guerrini et al. (“Guerrini”) should be reversed.

*Definiteness.* A second issue presented for review is whether the final rejection of claims 2, 6-8, 11-12 and 16 as supposedly indefinite should be maintained.

**(7) Grouping of claims.** Claims 1-20 are presented on appeal, of which only claim 1 is independent. While applicant maintains that each claim is separately patentable, for purposes of the first issue presented for review, namely unobviousness over a two-way combination of references (and for no other purpose), applicant will agree to allow the Board to decide the issue as to the ground of rejection on the basis of claim 1 alone. Applicant does not concede as to any alleged lack of separate and distinct patentability of the claims.

Each of claims 2, 6-8, 11-12 and 16 was rejected for alleged indefiniteness on claim-specific grounds, and the argument presented below is thus specific to each of those claims.

**(8) Argument.**

*Unobviousness.* A first issue presented for review is whether the final rejection of claims 1-8 and 11-20 as supposedly obvious over a two-way combination of US Pat. No. 5,173,142 to Billiu (“Billiu”) with US Pat. No. 5,362,431 to Guerrini et al. (“Guerrini”) should be reversed.

In evaluating this rejection, it is important to consider the prosecution history thus far. It is noted that the *non-final* art-rejection portion of the March 26, 2002 Office Action (paper nos. 14-15, page 8, paragraph 18 to page 10, paragraph 21) is word-for-word identical with the *final* art-rejection portion of the November 26, 2002 Office Action (paper nos. 19-20, page 5, paragraph 12 to page 8, paragraph 15). This is notable because the pending claims at the time of the second and final Office Action were quite different from the pending claims at the time of the first and non-final Office Action. Applicant’s attorney has difficulty understanding how, despite

the amendment of claim 1 in its entirety (which changed all of the other examined claims, all of which depend from claim 1), it could possibly be that the rejection stated prior to that amendment could properly apply, word for word, to the amended claims. Nonetheless, amended claim 1 stands finally rejected using precisely the language that was used in support of the non-final rejection of the original claim 1.

It is also important to consider the terminology regarding fibers that is used in this art and in the present patent application. Fibers can be:

- long-fiber material, such as the granules of Guerrini with cut long fibers and a length of preferably 2-15 mm; or they can be

- continuous filaments with continuous fibers (which are not cut).

But by definition a fiber cannot simultaneously be “long-fiber” and “continuous.” Long-fiber fibers are cut, and continuous fibers are not cut. Importantly (given certain arguments made by the Examiner) it is an oxymoron to speak of “long-fiber continuous filaments” because there is no such thing.

Claim 1 will now be discussed in some detail, with limitations indicated as claim elements a, b, c, d, e, and f. In each case, appellant mentions whether any of these limitations may be seen in either of the references that make up the two-reference combination.

element	limitation	found in Billiu	found in Guerrini
	A structural component of fiber-reinforced thermoplastic material comprising:	yes	yes
a	a shape-forming, long-fiber-reinforced thermoplastic matrix and		yes
b	separate, single load-bearing plastified and consolidated continuous fiber strands (3) with a thermoplastic matrix,	no	no

c	in a defined position within the structural component, the positions of the shape-forming long-fiber-reinforced thermoplastic matrix and the separate, single load-bearing plastified and consolidated continuous fiber strands with a thermoplastic matrix defining interfaces therebetween;	no	no
d	said continuous fiber strands being interconnected and having at least one load-transmitting flat internal connecting area (7) between two continuous fiber strands	no	no
e	and where the single continuous fiber strands are forming a load-bearing supporting structure (4) which is integrated in	no	no
f	and thermoplastically bonded to the long-fiber-reinforced thermoplastic matrix at the interfaces (6) therebetween.	no	no

These new features (claim elements) are extensively explained and illustrated in the application as filed, for example:

feature b) is shown in Figs. 1b, 2, 3, 25 (separate, single load-bearing continuous fiber strands (3));

feature c) is shown in Figs. 2, 15, 25 (in a defined position);

feature d) is shown in Figs. 1b, 3 (with load-transmitting flat internal connecting area (7));

feature e) is shown in Figs. 2, 3 (forming an integrated supporting structure (4)); and

feature f) is shown in Fig. 1a, 20a (being bonded at the interfaces (6)).

*The Examiner's argument.* In the final rejection at page 6, paragraph 13, the Examiner says:

Guerrini also discloses using continuous fibers with a thermoplastic matrix... (column 1, lines 1-31)

While this is true, Guerrini says nothing of separate single load-bearing continuous fiber strands according to limitation b. Indeed, conspicuously absent from the Office Action is any mention or discussion of limitations b-f of the pending claim 1.

In the final rejection at page 8, paragraph 16, the Examiner states:

The Guerrini reference discloses that the fibers used in the long-fiber reinforcement are

long-fiber continuous filaments as shown by the Guerrini reference in column 1, lines 54-60 and Example 1.

It is respectfully noted that this statement is untrue. Guerrini does not mention “long-fiber continuous filaments.” In fact as mentioned above it is an oxymoron to speak of “long-fiber continuous filaments” because there is no such thing. As mentioned above, fibers can be:

- long-fiber material, such as the granules of Guerrini with cut long fibers and a length of preferably 2-15 mm; or they can be

- continuous filaments with continuous fibers (which are not cut).

But by definition a fiber cannot simultaneously be “long-fiber” and “continuous.”

It should be noted that the continuous filaments in Guerrini are **cut** to produce long-fiber granules. Guerrini at Example 1 (col. 4, lines 43-46) explains that the product was **cut** and “Ten mm long granules were obtained.” Thus, importantly, the very reference Guerrini that the Examiner holds out to be authoritative also makes clear that “long-fiber” and “continuous” are two distinct things.

In the final rejection at page 9, paragraph 16, the Examiner further states:

The Guerrini reference discloses that continuous fibers strands in a thermoplastic matrix give rise to the increased mechanical properties in column 1, lines 60-68.

It is respectfully noted that this statement is untrue. No such statement appears in Guerrini. Guerrini contains no teaching or suggestion of separate continuous fiber strands such as those in limitation b of claim 1. Guerrini only says that long-fiber composites have better mechanical properties than short-fiber composites, but have lower mechanical properties than continuous-fiber composites.

The Guerrini reference teaches away from using (known) continuous fiber reinforcement in composites. Instead it teaches to use improved short-fiber materials (the granules) for the

production of shaped bodies - instead of components with continuous fiber reinforcement (which are stronger but expensive to produce).

In the final rejection at page 6, paragraph 13, the Examiner expresses the view that:

it is know[n] in the art that continuous fiber strands that run in different directions in the thermoplastic matrix give rise to the increased mechanical properties as shown by column 1, lines 60-68 of Guerrini.

It is respectfully noted that the cited passage in Guerrini says no such thing. The cited passage says no such thing about continuous fiber strands.

During prosecution the appellant, motivated by the case of *In Re Ahlert and Kruger*, 165 USPQ 418 (CCPA 1970), invited the Examiner to show support for this view. Nowhere in the present record has support been provided for this view.

*A discussion of Guerrini.* It may be helpful to say more about Guerrini.

The subject matter of Guerrini is to produce improved long-fiber composite material (granules) for the subsequent preparation of shaped bodies in a simple way (see column 2, lines 47-56).

This process comprises:

- impregnating continuous fibers with a thermoplastic polymer powder
- to form a continuous filament, calendering the filament
- and then cutting the filament into granules, having a length in the range of 2 to 100 mm and preferably from 2 to 15 mm.

These granules of long-fiber material are then used to produce shaped bodies containing short-fiber-reinforcement only (and without any continuous fiber reinforcement). There is no hint or suggestion in Guerrini to integrate separate continuous fiber strands as a reinforcement

into a short-fiber composite component.

With Guerrini it is not possible to produce structural components for demanding load-bearing functions according to the present invention.

The objective and the solution of Guerrini are entirely different from the objective and the solution of the present invention.

*The claimed invention.* It may also be helpful to say more about the claimed invention.

The objective of the claimed invention is to create a light load-bearing structural component, which can fulfill demanding load-bearing functions and which can be manufactured cost-effectively and in different shapes and with short cycle times in a series production.

The integrated load-bearing supporting structure (4) is integrated in the shape-forming long-fiber-reinforced thermoplastic matrix (2) and is thermoplastically bonded (6) to it. The structure is built with separate single load-bearing continuous fiber strands (3) which must be in a defined position within the structural component and which are interconnected at load-transmitting flat internal connecting areas (7) between the single continuous fiber strands.

With this strong integrated load-bearing supporting structure, which is positioned and integrated in the long-fiber thermoplastic matrix, the objective of the present invention is achieved.

In contrast to this the references have completely different objectives and solutions, and there are no hints or suggestions of the limitations of the claim. It is important to consider all of limitations b through f, which are now discussed one by one.

*b) separate, single load-bearing plastified and consolidated continuous fiber strands with a thermoplastic matrix (3)* The thin continuous filaments of Guerrini are not load-bearing, strong



continuous fiber strands and they are not within the structural component. There is no continuous reinforcement in the shaped bodies of Guerrini.

Therefore also the limitations c, d, e and f, which further define the continuous fiber strands, cannot be present in Guerrini.

*c) in a defined position within the structural component, the positions of the shape-forming long-fiber reinforced thermoplastic matrix and the separate, single load-bearing plastified and consolidated continuous fiber strand with a thermoplastic matrix defining interfaces therebetween*

*d) said continuous fiber strands being interconnected and having at least one load-transmitting flat internal connecting area (7) between two continuous fiber strands*

*e) and where the single continuous fiber strands are forming a load-bearing supporting structure (4) which is integrated in*

*f) and thermoplastically bonded to the long-fiber-reinforced thermoplastic matrix at the interfaces (6) therebetween.*

The references Billiu and Guerrini do not disclose nor hint at a structural component with limitations b, c, d, e, and f.

During prosecution, appellant requested that the Examiner point out where in the references the limitations b, c, d, e, and f may be found. The present record is devoid of any indication where, in either of the cited references, even one of these five limitations may be found.

*Definiteness.* A second issue presented for review is whether the final rejection of claims 2, 6-8, 11-12 and 16 as supposedly indefinite should be maintained. An amendment was filed April 25,

2003, amending claims 2-20 solely as to form. The Examiner refused to enter that amendment, basing the refusal on the view that the April 25, 2003 amendment "seeks to narrow the claims." For this reason the Appendix presents the claims as they stood prior to the April 25, 2003 amendment. The Examiner's view that the amendment "seeks to narrow the claims" is in error; the amendment seeks only to address matters of form raised previously by the Examiner. It is suggested that the amendment be entered and that the rejection of claims 2, 6-8, 11-12 and 16 as supposedly indefinite should be withdrawn.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Carl Oppedahl".

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